

The behavioural layer (JavaScript)

Webpage Design

Web design layers

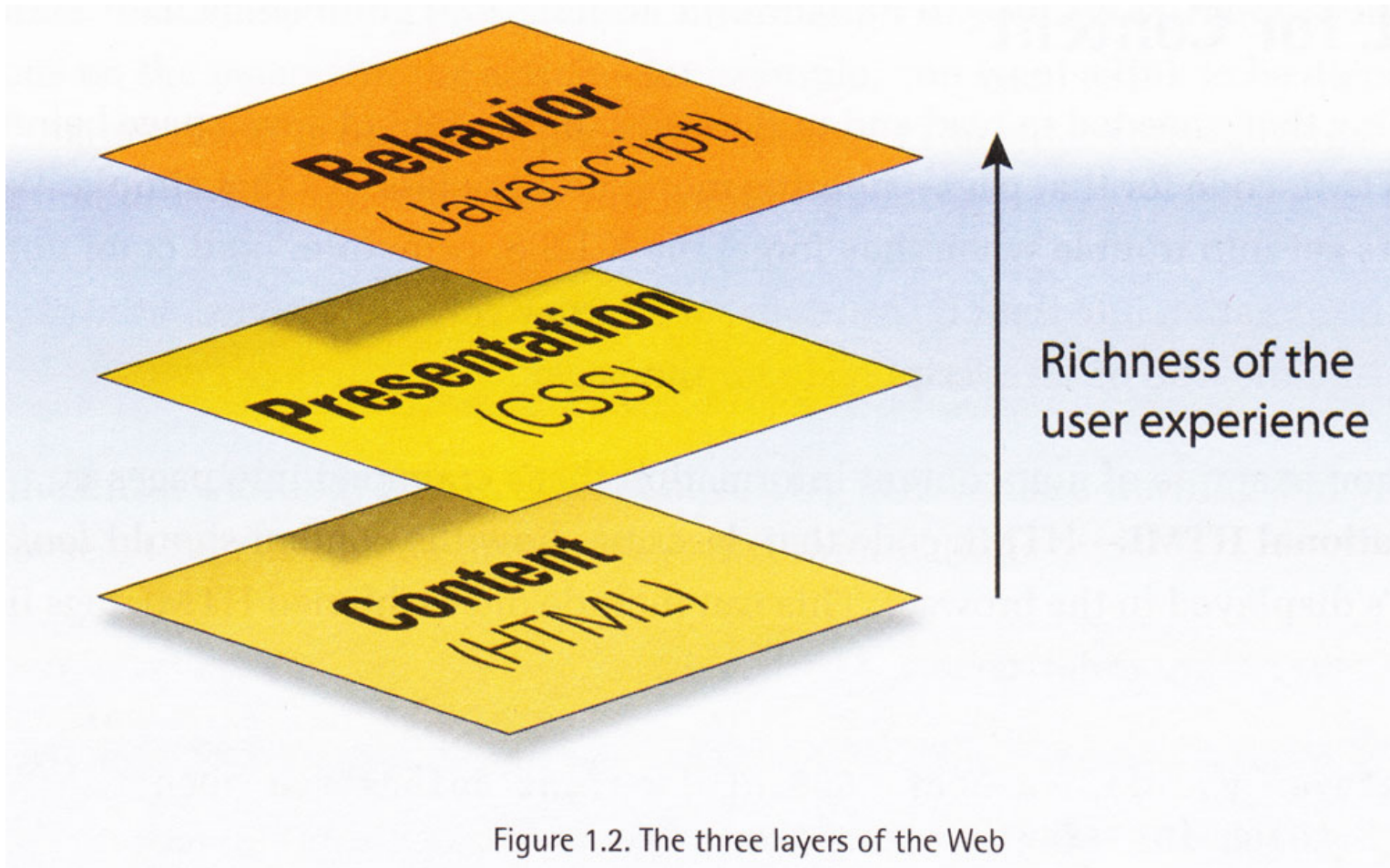


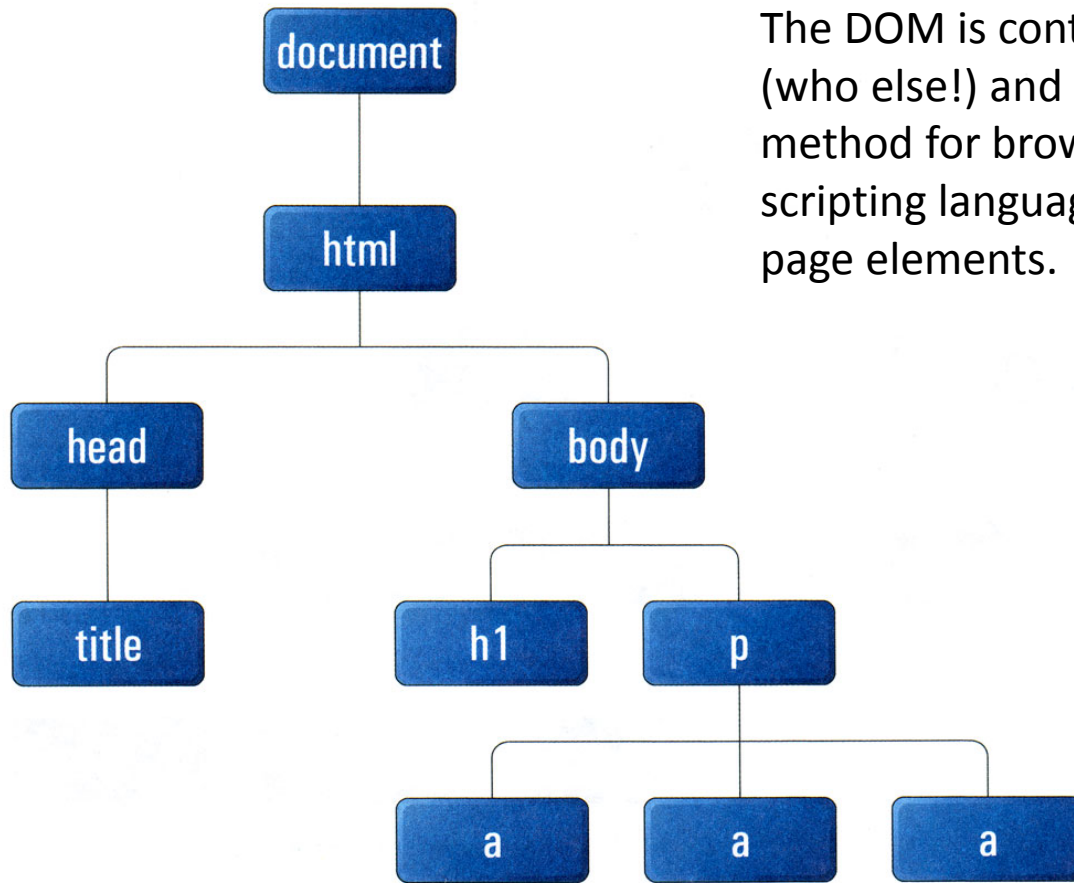
Figure 1.2. The three layers of the Web

JavaScript

- Originally developed by Netscape with Sun Microsystems in 1995
- Microsoft followed with Jscript
- JavaScript now standardised by ECMA
- Got a bad name because of misuse by some designers
- Has now been rehabilitated and used with the DOM and other web standards (basis of Ajax*)

* Asynchronous JavaScript And XML

The Document Object Model



The DOM is controlled by W3C (who else!) and is a standard method for browsers and scripting languages to access page elements.

Figure 3.2. The DOM tree, including the document node

Assigning objects to variables

```
<body>
```

```
var body = document.getElementsByTagName("body")[0];
```

Example (body background-color)

```
<div id= "box">some content</div>
```

```
var box = document.getElementById("box");
```

Example (#box background-color)

Changing CSS values

A single value:

```
function changeText(){  
document.getElementById("box").style.fontSize = "80%";  
}
```

Example (#box text-size)

Multiple values:

```
function changeStuff(){  
var box = document.getElementById("box");  
box.style.backgroundColor = "#EFAE4C";  
box.style.border = "10px solid #798492";  
box.style.paddingLeft = "100px";  
}
```

Example (#box *various*)

A Jump Menu

```
<script type="text/javascript" src="/javascript/jump.js"></script>
```



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Webpage Design

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Course co-ordinator : David Watson

Introduction

This course covers the design and implementation of web pages and small websites. It is concerned with the client-side technologies, XHTML and CSS and includes an introduction to

- Select Course
- Select Course
- Landscape Science & Techniques
- Digital Landscapes
- Advanced Representation
- Landscape Digital Design
- CAD & Visualisation
- Webpage Design**
- Website Planning
- Net Art/Criticism

```
<form name="jumpmenu" id="jumpmenu" action="">  
<select name="jump" onchange="MM_jumpMenu('parent',this,0)">  
<option selected="selected" value="#">Select Course</option>  
<option value="/ENVT1053/">Landscape Science & Techniques</option>  
<option value="/ENVT1008/">Digital Landscapes</option>  
<option value="/ENVT1010/">Advanced Representation</option>  
<option value="/ENVT1016/">Landscape Digital Design</option>  
<option value="/ENVT1023/">CAD & Visualisation</option>  
<option value="/DESI1046/">Webpage Design</option>  
<option value="/DESI1047/">Website Planning</option>  
<option value="/DESI1054/">Net Art/Criticism</option>  
</select>  
</form>
```

A Jump Menu

jump.js

```
function MM_jumpMenu(targ,selObj,restore){ //v3.0
  eval(targ+".location='"+selObj.options[selObj.selectedIndex].value+"'");
  if (restore) selObj.selectedIndex=0;
}
```

```
function MM_findObj(n, d) { //v4.01
  var p,i,x; if(!d) d=document; if((p=n.indexOf("?"))>0&&parent.frames.length) {
    d=parent.frames[n.substring(p+1)].document; n=n.substring(0,p);}
  if(!(x=d[n])&&d.all) x=d.all[n]; for (i=0;!x&&i<d.forms.length;i++) x=d.forms[i][n];
  for(i=0;!x&&d.layers&&i<d.layers.length;i++) x=MM_findObj(n,d.layers[i].document);
  if(!x && d.getElementById) x=d.getElementById(n); return x;
}
```

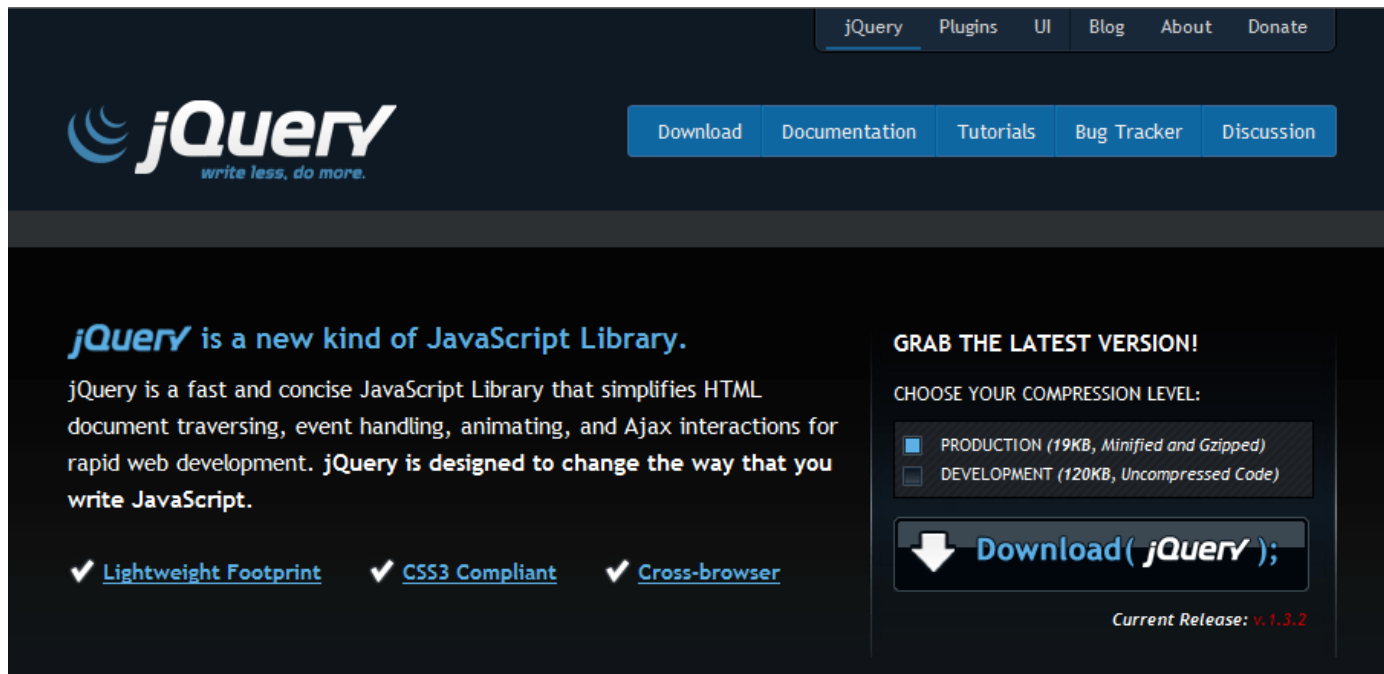
```
function MM_jumpMenuGo(selName,targ,restore){ //v3.0
  var selObj = MM_findObj(selName); if (selObj) MM_jumpMenu(targ,selObj,restore);
}
```

Keeping markup clean

- The main problem with traditional approaches to JavaScript is that some of the code has to be placed inline.
- Shouldn't we be separating JavaScript from our markup in the same way that we separate CSS from our markup?
- This can be done, using the DOM to target page elements but requires advanced JavaScript skills.
- What's the solution?

jQuery

- jQuery is a JavaScript library that we can use to implement advanced techniques without needing to know advanced JavaScript.



The screenshot shows the jQuery website homepage. At the top, there is a navigation bar with links for jQuery, Plugins, UI, Blog, About, and Donate. Below this is the jQuery logo with the tagline "write less, do more." and a secondary navigation bar with links for Download, Documentation, Tutorials, Bug Tracker, and Discussion. The main content area features a heading "jQuery is a new kind of JavaScript Library." followed by a paragraph describing the library's capabilities. Below the paragraph are three checkmarks indicating features: Lightweight Footprint, CSS3 Compliant, and Cross-browser. On the right side, there is a section titled "GRAB THE LATEST VERSION!" with a "CHOOSE YOUR COMPRESSION LEVEL:" section containing two radio buttons: "PRODUCTION (19KB, Minified and Gzipped)" (selected) and "DEVELOPMENT (120KB, Uncompressed Code)". Below this is a large "Download (jQuery);" button with a download icon. At the bottom right, it says "Current Release: v.1.3.2".

jQuery Example

```
<p id="link"><a href="#extra">More content&hellip;</a></p>
<p id="extra">Duis sed ligula odio, sed posuere magna...</p>
```

The HTML

```
#extra {
display:none;
}
```

The CSS

```
<script src="/javascript/jquery-1.3.2.min.js" type="text/javascript"></script>
<script type="text/javascript">
$(document).ready(function(){
    $("#link a").click(function(){
        $("#extra").toggle();
        return false;
    });
});
</script>
```

The JavaScript

This example uses the jQuery `.toggle()` function to show/hide page elements: [Example](#)

jQuery Example (slide effect)

```
<p id="link"><a href="#extra">More content&hellip;</a></p>
<p id="extra">Duis sed ligula odio, sed posuere magna...</p>
```

The HTML
(structural layer)

```
#extra {
display:none;
}
```

The CSS
(presentation layer)

```
<script src="/javascript/jquery-1.3.2.min.js" type="text/javascript"></script>
<script type="text/javascript">
$(document).ready(function(){
    $("#link a").click(function(){
        $("#extra").slideToggle();
        return false;
    });
});
</script>
```

The JavaScript
(behavioural layer)

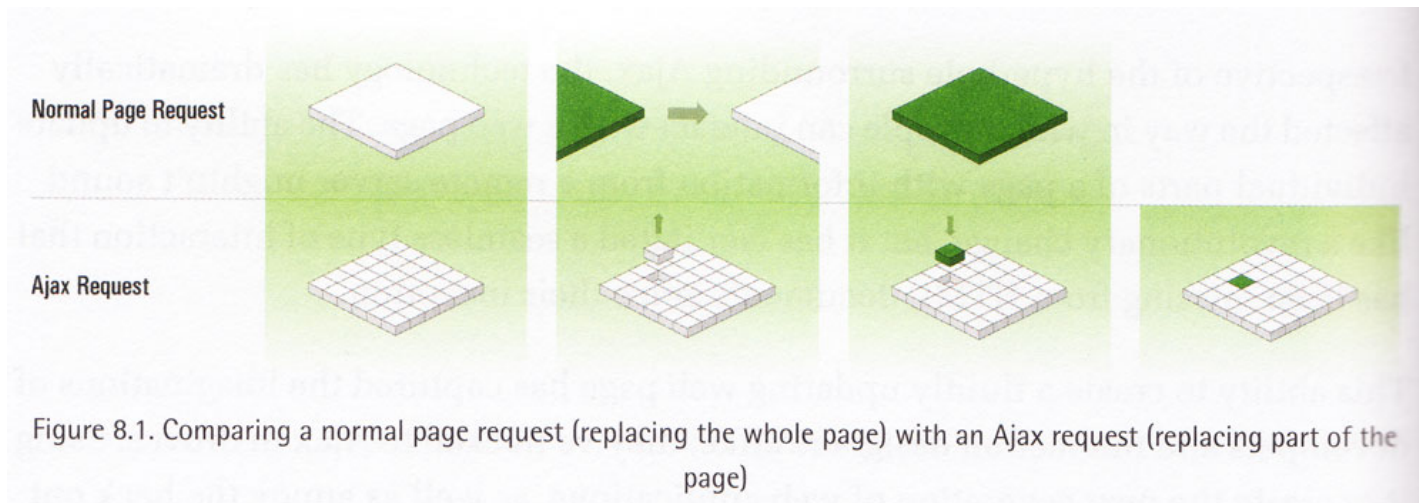
This example uses the jQuery `.slideToggle()` function to show/hide page elements with a "slide" effect. Notice that no change is required to HTML or CSS: [Example](#)

Separation of the Layers

- Our ultimate goal is to separate the 3 layers of our page, the Structural, the Presentation and the Behavioural.
- Using a combination of XHTML, CSS and jQuery, a web designer can achieve this goal without needing to know how to work with JavaScript at a fundamental level.
- The glue that holds all these things together is the element id.
- Once we define an id `<div id="element">`, this element can be targeted by both CSS and JavaScript (`#element`).

What is AJAX?

- **AJAX** (**A**synchronous **J**avaScript and **X**ML)
- Data is retrieved using the XMLHttpRequest object
- Allows parts of a page to be refreshed with new data from the server



```
<div id="end">THE END</div>
```